

## REMARKS

The applicants wish to thank the Examiner for the allowance of claims 1-8 and 18-21. It is noted that claims 9 and 11-17 were rejected and claim 10 was found objectionable. The Examiner rejected claims 9, 11, 13, 15-17 under 35 U.S.C. §102(b) as being anticipated by the Homme '017 patent. The Examiner's opinion is that the Homme disclosure fully meets the limitation of the process as defined by the instant claims. The Homme '017 patent is directed to a method for making titanium from titanium tetrachloride and alkali metals such as sodium. As disclosed in the Homme '017 patent, the alkali metal such as sodium is introduced through inlet pipes 23 and 24 as a liquid and titanium tetrachloride liquid is vaporized in boiler 28 and introduced as a vapor in reactor 1 through the pipe 30. Therefore, it is readily seen that sodium is introduced separately from the sodium through pipes 23 and 24 and titanium tetrachloride vapor is introduced through pipe 30, all into a reactor 1. It is also noted from the Homme '017 patent that various subchlorides such as  $TiCl_2$  and  $TiCl_3$  are produced and dissolved in the melt product, see column 3, lines 60-column 4, line 22. This is disadvantageous since these subchlorides are a source of unwanted chlorine contamination of the titanium product. As can be seen from the Homme patent, the titanium tetrachloride vapor is introduced away from the alkali metal entering the reactor 1 through pipes 23 and 24.

Claim 9 of the instant application requires that  $TiCl_4$  vapor is submerged in a liquid sodium or sodium with an alkaline earth metal. Claim 13 requires that a chloride vapor or mixture of chloride vapor be introduced into a reaction zone in the interior of a flowing stream of liquid alkali metal. The other claims rejected by the Examiner in this portion of the Office Action are all dependent on the above-mentioned independent

claims 9 and 13. The Examiner states that his position is:

"...that a single molecule of vapor located within the area encompassed by the metal in the prior art fully meets the limitations of the claims as presented."

It is submitted that the Examiner's reading of the words "submerged" (claim 9) or "introduce the vapors into a reaction zone in the interior of a flowing stream of liquid" (claim 13) is extraordinarily strained and does not support the rejection. It cannot be said that the Homme patent shows or suggest introducing a vapor submerged in the liquid. The vapor is introduced through pipe 30 into a reaction vessel in which liquid may be falling from pipes 23 and 24 but it is entirely contrary to the ordinary meaning of the word "submerged" to say that the titanium tetrachloride vapor from pipe 30 is submerged in the liquid sodium. This strained interpretation is not supported by any normal usage of the term "submerged". Similarly, the Examiner's construction of the language of claim 13 which requires chloride vapors to be introduced into a "reaction zone in the interior of a flowing stream" is also not supported by any normal usage of the terms in the claim.

That the subject invention is highly novel and a substantial advance in the art, is shown in the enclosed copy of an article which appeared in the July 2001 issue of Advanced Materials & Processes. This article was written by Dr. Steven J. Gerdemann of Albany Research Center in Albany, Oregon. Dr. Gerdemann is not employed by nor owns any part of the applicant. The Albany Research Center was previously the National Bureau of Mines. As shown in the article, the Armstrong process is a relatively uncomplicated continuous process that makes powder and is the most advanced process reported. Accordingly, it is suggested in view of the extraordinarily strained

strained interpretation of the claims adopted by the Examiner concerning the language of claims 9 and 13 this rejection should be withdrawn.

Claims 9, 11 and 13-17 were rejected under 35 U.S.C. §102(b) as being anticipated by the Worthington '931 patent. The Worthington patent has been discussed many times in this application as well as the parents, Armstrong et al. U.S. patent no. 5,779,761 and the Armstrong et al. U.S. patent no. 5,958,106. The Worthington patent simply shows a pool of titanium tetrachloride 5 which is vaporized by a heater 8, the vapor rising upwardly to meet a fine spray or mist of molten sodium dispersed from the atomizing nozzle 4. The Examiner's interpretation of the language of independent claims 9 and 13 is so strained that it cannot support any rejection based on the Worthington patent and it is respectfully suggested that the rejection under 35 U.S.C. §102 as being anticipated by the Worthington patent must be withdrawn.

Claims 12-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Homme patent. Claims 12 and 14 are dependent upon, respectively, independent claims 9 and 13 and therefore are completely differentiated from the Homme patent for the reasons hereinbefore set forth. This rejection should be withdrawn.

Claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over the Worthington patent. The Worthington patent is entirely different from the present invention as previously described and cannot support any rejection of claim 12, which is dependent on independent claim 9.

For all the foregoing reasons, it is respectfully requested that all the rejections of the claims, as presented, be withdrawn and this application be passed to issuance. It is noted that claim 10 was objected to as being dependent upon a rejected base claim. In view of the present remarks, it is respectfully suggested that this claim be allowed as

well as the others rejected by the Examiner. It is earnestly suggested that the claims in this application, as presented, are clearly patentable in view of the Homme '017 patent and Worthington '931 patent, neither of which remotely show or suggest the invention claimed.

In the event that the Examiner disagrees, for any reason whatsoever, he is requested to contact the undersigned attorney who will be happy to arrange an interview with Dr. Armstrong, if required.

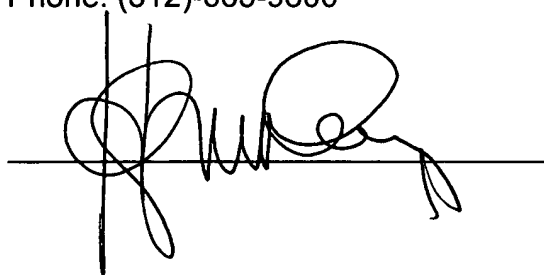
An earnest effort has been made to respond to all the rejections in the above-mentioned Office Action and it is respectfully submitted that this application be passed to issue.

Respectfully submitted,

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Dated: \_\_\_\_\_

10/3/01

A handwritten signature in black ink, appearing to be "H. M. Levy", written over a horizontal line.